CLAIMS

We claim:

SUB A47

1. A system for assisting a user with configuration management comprising:

an object-oriented database management system containing a plurality of configuration items;

said object-oriented database management system having an ability for making changes to a predetermined configuration item of said plurality of configuration items;

a copy of said predetermined configuration item is disposed in said object-oriented database management system, in response to a direct user intervention; and,

a copy of each object which directly and by ownership through another owner, owns said predetermined configuration item, is also disposed in the object-oriented database management system; and,

a shared ownership of other configuration items which have not been modified themselves and which are owned by said predetermined configuration item.

2. A system of claim 1 wherein every object in said object-oriented database management system has as a component thereof a list of owners of said object.

SUB A5 3. A system of claim 2 wherein each element of said list includes a context characteristic for an owner of said object.

4. A system of claim 3 further includes reference relationships from a first object to a second object, which includes a context characteristic on an ownership characteristic of said second object.

5. A system of claim 1 further including:

a shared ownership of other configuration items which have not been modified themselves and which are owned by each object which directly and by ownership through another owner, owns said predetermined configuration item; and,

a workspace for making changes to said plurality of configuration items in isolation.

6. A system of claim 5 wherein the workspace contains said copy of said predetermined configuration item and a copy of each object which directly and by ownership through another owner, owns said predetermined configuration item.

7. A system of claim 6 wherein said shared ownership extends from inside said workspace to outside of said workspace, through the use of ownership lists for each item outside of the workspace which is owned by items in the workspace.

SUB A67 8. A system of claim 1 wherein there is no table containing a reference to each object that is a member of a composite object.

9. A method of managing a configuration of an engineering design, comprising the steps of:

providing an ODBMS for maintaining information about an engineering design;

providing a plurality of pre-existing objects in said ODBMS, which contain information about said engineering design;

creating, via an ODBMS user intervention, a newer version of one of said plurality of pre-existing objects;

creating, without direct ODBMS user intervention, an automatically created copy of every object which owns said newer version which is created by said ODBMS user intervention;

creating, without direct ODBMS user intervention, an automatically created copy of every object which owns an automatically created copy which was created without direct ODBMS user intervention; and,

creating, without direct ODBMS user intervention, a sharing relationship, between a first automatically created copy and a first of said plurality of pre-existing objects, where said first of said plurality of pre-existing objects is owned by said first automatically created copy and is not itself an automatically created copy.

10. A method of claim 9 wherein said step of creating, via an ODBMS user intervention, a newer version of one of said plurality of pre-existing objects, results in said newer version being located in an independent workspace, to facilitate concurrent engineering by providing change isolation capabilities.

11. A method of claim 10 wherein said sharing relationship is not between two objects located in said independent workspace.

12. A method of claim 11 which does not include the step of creating a table containing a reference to each object that is a member of a composite object.

13. A method of claim 9 wherein the step of providing a plurality of pre-existing objects in said ODBMS, which contain information about said engineering design, includes the step of:

providing, for each of said plurality of pre-existing objects as a component thereof, a list of owners of said each of said plurality of pre-existing objects.

14. A method of claim 13 wherein each element of said list includes a context characteristic for an owner of an object.

15. A configuration management system comprising:

means for organizing engineering information in the form of a plurality of objects;

means for maintaining information about all owners of each of said plurality of objects;

means for creating a new version of a first of said plurality of objects;

means for automatically creating copies of all objects in an upwardly directed ownership path for said first of said plurality of objects; and,

means for providing coupling from an automatically created copy to a subset of said plurality of objects, without making a copy of objects in said subset of said plurality of objects.

16. A system of claim 15 wherein said means for organizing information is an ODBMS.

SUB A7 17. A system of claim 16 wherein said means for maintaining information is a list of owners of each of said plurality of objects where each element of the list contains a context characteristic for an owner of an object.

18. A system of claim 17 wherein said means for providing coupling from an automatically created copy to a subset of said plurality of objects, without making a copy of objects in said subset of said plurality of objects, includes a sharing relationship.

19. A system of claim 15 further comprising means for providing change isolation capabilities.

SUB A8

20. A system comprising:

an ODBMS having a plurality of configuration items therein, wherein said each of said plurality of configuration items is an object and includes engineering information relating to a predetermined engineering design;

said ODBMS having an ability for making changes to a predetermined configuration item of said plurality of configuration items;

a copy of said predetermined configuration item is disposed in said object-oriented database management system, in response to a direct user intervention;

a copy of each object which directly and by ownership through another owner, owns said predetermined configuration item is also disposed in ODBMS;

a shared ownership of other configuration items which are owned by said predetermined configuration item;

wherein every object in said object-oriented database management system has as a component thereof a list of owners of said object;

wherein each element of said list includes a context characteristic for an owner of said object;

reference relationships from a first object to a second object which includes a context characteristic on an ownership characteristic of said second object;

a workspace for making changes to said plurality of configuration items in isolation;

wherein the workspace contains said copy of said predetermined configuration item and a copy of each object which directly and by ownership through another owner, owns said predetermined configuration item; and,

wherein said shared ownership extends from inside said workspace to outside of said workspace, through the use of ownership lists for each item outside of the workspace which is owned by items in the workspace.